*Hearing Research*, 43 (1990) 277–278
Elsevier



# Author Index

Aberdeen, J., see Carlisle, L. (43) 107
Adams, J.C., see Spicer, S.S. (43) 205

Bleich, N., see Pratt, H. (43) 159
Burnstock, G., see Carlisle, L. (43) 107

Caird, D., Pillmann, F. and Klinke, R.
Responses of single cells in the cat inferior colliculus to binaural masking level difference signals (43) 1
Carlisle, L., Aberdeen, J., Forge, A. and Burnstock, G.
Neural basis for regulation of cochlear blood flow: Peptidergic and adrenergic innervation of the spiral modiolar artery of the guinea pig (43) 107
Cazals, Y., see Horner, K. (43) 71
Cheatham, M.A. and Dallos, P.
Two-tone interactions in inner hair cell receptor potentials: AC versus DC effects (43) 135
Coleman, W.A.C.J.J.R. and Newton, E.H.
Auditory brainstem responses to tonal stimuli in young and aging rats (43) 171
Collet, L., Kemp, D.T., Veuillet, E., Duclaux, R., Moulin, A. and Morgon, A.
Effect of contralateral auditory stimuli on active cochlear micro-mechanical properties in human subjects (43) 251
Crowther, J.A., Miller, J.M. and Kileny, P.R.
Effect of anesthesia on acoustically evoked middle latency response in guinea pigs (43) 115

Dallos, P., see Cheatham, M.A. (43) 135
Drescher, D.G., see Khan, K.M. (43) 149
Duclaux, R., see Collet, L. (43) 251
Durham, D., Rubel, E.W. and Steel, K.P.
Cochlear ablation in *deafness* mutant mice: 2-deoxyglucose analysis suggests no spontaneous activity of cochlear origin (43) 39

Eggermont, J.J.
Temporal modulation transfer functions for single neurons in the auditory midbrain of the leopard frog. Intensity and carrier-frequency dependence (43) 181

Feingold, K., see Pratt, H. (43) 159
Forge, A., see Carlisle, L. (43) 107

Guth, P.S., see Housley, G.D. (43) 121
Guttenplan, M., Jenkins, O.H. and Saunders, J.C.
Structural changes in hair cells after incubation in tissue culture medium (43) 47

Henley, III, C.M., Owings, M.H., Stagner, B.B., Martin, G.K. and Lonsbury-Martin, B.L.
Postnatal development of $2f_1 - f_2$ otoacoustic emissions in pigmented rat (43) 141
Hildesheimer, M., Makai, E., Muchnik, C. and Rubinstein, M.
The influence of the efferent system on acoustic overstimulation (43) 263
Horner, K. and Cazals, Y.
Distortion products in early stage experimental hydrops in the guinea pig (43) 71
Housley, G.D., Norris, C.H. and Guth, P.S.
Cholinergically-induced changes in outward currents in hair cells isolated from the semicircular canal of the frog (43) 121
Hubbard, A.E. and Mountain, D.C.
Haircell forward and reverse transduction: Differential suppression and enhancement (43) 269

Jenkins, O.H., see Guttenplan, M. (43) 47

Kemp, D.T., see Collet, L. (43) 251
Khan, K.M. and Drescher, D.G.
Proteins of the gelatinous layer of the trout saccular otolithic membrane (43) 149
Kileny, P.R., see Crowther, J.A. (43) 115
Klinke, R., see Caird, D. (43) 1
Kössl, M., see Russell, I.J. (43) 55

Lonsbury-Martin, B.L., see Henley, III, C.M. (43) 141

Makai, E., see Hildesheimer, M. (43) 263
Martin, G.K., see Henley, III, C.M. (43) 141
Miller, J.M., see Crowther, J.A. (43) 115
Mills, J.H., see Smith, D.I. (43) 95
Morgon, A., see Collet, L. (43) 251
Moulin, A., see Collet, L. (43) 251
Mountain, D.C., see Hubbard, A.E. (43) 269
Muchnik, C., see Hildesheimer, M. (43) 263

Närvänen, O., see Ylikoski, J. (43) 199
Newton, E.H., see Coleman, W.A.C.J.J.R. (43) 171
Norris, C.H., see Housley, G.D. (43) 121

Owings, M.H., see Henley, III, C.M. (43) 141

Pillmann, F., see Caird, D. (43) 1
Pirvola, U., see Ylikoski, J. (43) 199

Pratt, H., Bleich, N. and Feingold, K.
Three-channel Lissajous' trajectories of auditory brainstem evoked potentials: Contribution of fast and slow components to planar segment formation (43) 159

Reuter, G. and Zenner, H.-P.
Active radial and transverse motile responses of outer hair cells in the organ of Corti (43) 219
Richardson, G.P., see Russell, I.J. (43) 55
Rubel, E.W., see Durham, D. (43) 39
Rubinstein, M., see Hildesheimer, M. (43) 263
Russell, I.J., Richardson, G.P. and Kössl, M.
The responses of cochlear hair cells to tonic displacements of the sensory hair bundle (43) 55
Ryals, B.M., Ten Eyck, B. and Westbrook, E.W.
Ganglion cell loss continues during hair cell regeneration (43) 81

Saunders, J.C., see Guttenplan, M. (43) 47
Schmiedt, R.A., see Smith, D.I. (43) 95
Schrott, A., see Spoendlin, H. (43) 25
Schulte, B.A., see Spicer, S.S. (43) 205
Smith, D.I., Mills, J.H. and Schmiedt, R.A.
Frequency selectivity of the middle latency response (43) 95
Spicer, S.S., Schulte, B.A. and Adams, J.C.
Immunolocalization of $Na^+$,$K^+$-ATPase and carbonic anhydrase in the gerbil's vestibular system (43) 205
Spoendlin, H. and Schrott, A.
Analysis of the human auditory nerve (43) 25
Stagner, B.B., see Henley, III, C.M. (43) 141
Steel, K.P., see Durham, D. (43) 39

Ten Eyck, B., see Ryals, B.M. (43) 81

Van Stokkum, I.H.M.
Modelling the response of auditory midbrain neurons in the grassfrog to temporally structured monoaural stimuli (43) 231
Veuillet, E., see Collet, L. (43) 251
Virtanen, I., see Ylikoski, J. (43) 199

Westbrook, E.W., see Ryals, B.M. (43) 81

Ylikoski, J., Pirvola, U., Närvänen, O. and Virtanen, I.
Nonerythroid spectrin (fodrin) is a prominent component of the cochlear hair cells (43) 199

Zenner, H.-P., see Reuter, G. (43) 219

*Hearing Research*, 43 (1990) 279–283
Elsevier



# Subject Index

**ABR**
Middle latency response; Auditory evoked response; Tuning curve; Forward masking; Frequency selectivity; Gerbil; MLR (Smith, D.I. (43) 95)

**Acetylcholine**
Efferent; Whole cell patch clamp; Frog; Potassium current; Carbachol; Atropine; Semicircular canal; Hair cell (Housley, G.D. (43) 121)

**Adaptation**
Outer hair cell; Cochlea; Hair bundle (Russell, I.J. (43) 55)

**Aging**
Auditory brainstem; Tonal stimuli; Rat; Latency; Interpeak interval (Coleman, W.A.C.J.J.R. (43) 171)

**Amplitude modulation**
Modulation transfer function; Group delay; Vector strength; Intensity dependence; Auditory midbrain, Leopard frog (Eggermont, J.J. (43) 181)

**Anesthesia**
Middle latency response; Ketamine; Xylazine; Guinea pig; Auditory system sensitivity (Crowther, J.A. (43) 115)

**Anuran**
Auditory nerve; Dorsal medullary nucleus; Neural modelling; Temporal selectivity; Torus semicircularis (Van Stokkum, I.H.M. (43) 231)

**ATPase-$Na^+$,$K^+$**
Cochlea; Vestibular system; Carbonic anhydrase; Immunocytochemistry; Gerbil; Inner ear (Spicer, S.S. (43) 205)

**Atropine**
Efferent; Whole cell patch clamp; Frog; Acetylcholine; Potassium current; Carbachol; Semicircular canal; Hair cell (Housley, G.D. (43) 121)

**Auditory brainstem**
Tonal stimuli; Aging; Rat; Latency; Interpeak interval (Coleman, W.A.C.J.J.R. (43) 171)

**Auditory brainstem evoked potentials**
Equivalent dipole moment; Digital filtering; Planar segments; Three-channel Lissajous trajectories (Pratt, H. (43) 159)

**Auditory evoked response**
Middle latency response; Tuning curve; Forward masking; Frequency selectivity; Gerbil; MLR; ABR (Smith, D.I. (43) 95)

**Auditory midbrain, Leopard frog**
Amplitude modulation; Modulation transfer function; Group delay; Vector strength; Intensity dependence (Eggermont, J.J. (43) 181)

**Auditory nerve**
Anuran; Dorsal medullary nucleus; Neural modelling; Temporal selectivity; Torus semicircularis (Van Stokkum, I.H.M. (43) 231)

**Auditory system sensitivity**
Middle latency response; Ketamine; Xylazine; Guinea pig; Anesthesia (Crowther, J.A. (43) 115)

**Basilar papilla**
Hair cells; Chicks; Culture medium (Guttenplan, M. (43) 47)

**Binaural masking**
Cat; Inferior colliculus; Single cell recording (Caird, D. (43) 1)

**Block surface method**
Cochlear nerve; Spiral ganglion; Human; Electron microscopy; Quantification (Spoendlin, H. (43) 25)

**Calcitonin gene-related peptide**
Cochlear blood flow; Noradrenaline; Substance P; Vasoactive intestinal polypeptide; Neuropeptide Y (Carlisle, L. (43) 107)

**Carbachol**
Efferent; Whole cell patch clamp; Frog; Acetylcholine; Potassium current; Atropine; Semicircular canal; Hair cell (Housley, G.D. (43) 121)

**Carbonic anhydrase**
Cochlea; Vestibular system; ATPase-$Na^+$,$K^+$; Immunocytochemistry; Gerbil; Inner ear (Spicer, S.S. (43) 205)

**Cat**
Inferior colliculus; Single cell recording; Binaural masking (Caird, D. (43) 1)

**Central auditory system**
Deafferentation; Genetic deafness (Durham, D. (43) 39)

**Chicks**
Hair cells; Basilar papilla; Culture medium (Guttenplan, M. (43) 47)

**Cochlea**
Outer hair cell; Adaptation; Hair bundle (Russell, I.J. (43) 55)

Hydrops; Distortion; Guinea pig (Horner, K. (43) 71)

Hair cell; Receptor potential; Two-tone suppression (Cheatham, M.A. (43) 135)

Immunocytochemistry; Spectrin; Hair cells; Guinea pig (Ylikoski, J. (43) 199)

Vestibular system; ATPase-$Na^+$,$K^+$; Carbonic anhydrase; Immunocytochemistry; Gerbil; Inner ear (Spicer, S.S. (43) 205)

Hair cell; Transduction; Furosemide (Hubbard, A.E. (43) 269)

**Cochlear amplifier**
Frequency selectivity; Speech discrimination; Hearing loss (Reuter, G. (43) 219)

**Cochlear blood flow**
Noradrenaline; Calcitonin gene-related peptide; Substance P; Vasoactive intestinal polypeptide; Neuropeptide Y (Carlisle, L. (43) 107)

**Cochlear development**
Distortion-product emissions; Pigmented rat (Henley, III, C.M. (43) 141)

**Cochlear micro-mechanics**
Oto-acoustic emission; Olivo-cochlear efferent; Contralateral sound (Collet, L. (43) 251)

**Cochlear nerve**
Spiral ganglion; Human; Electron microscopy; Quantification; Block surface method (Spoendlin, H. (43) 25)

**Collagen**
Otolithic membrane; Saccule; Polyacrylamide gel electrophoresis; Electroblotting; Lectin binding (Khan, K.M. (43) 149)

**Contralateral sound**
Oto-acoustic emission; Olivo-cochlear efferent; Cochlear micro-mechanics (Collet, L. (43) 251)

**Culture medium**
Hair cells; Basilar papilla; Chicks (Guttenplan, M. (43) 47)

**Deafferentation**
Genetic deafness; Central auditory system (Durham, D. (43) 39)

**Digital filtering**
Auditory brainstem evoked potentials; Equivalent dipole moment; Planar segments; Three-channel Lissajous trajectories (Pratt, H. (43) 159)

**Distortion**
Hydrops; Cochlea; Guinea pig (Horner, K. (43) 71)

**Distortion-product emissions**
Pigmented rat; Cochlear development (Henley, III, C.M. (43) 141)

**Dorsal medullary nucleus**
Anuran; Auditory nerve; Neural modelling; Temporal selectivity; Torus semicircularis (Van Stokkum, I.H.M. (43) 231)

**Efferent**
Whole cell patch clamp; Frog; Acetylcholine; Potassium current; Carbachol; Atropine; Semicircular canal; Hair cell (Housley, G.D. (43) 121)

**Efferent innervation**
Temporary threshold shift; Olivocochlear bundle (Hildesheimer, M. (43) 263)

**Electroblotting**
Otolithic membrane; Saccule; Polyacrylamide gel electrophoresis; Lectin binding; Collagen (Khan, K.M. (43) 149)

**Electron microscopy**
Cochlear nerve; Spiral ganglion; Human; Quantification; Block surface method (Spoendlin, H. (43) 25)

**Equivalent dipole moment**
Auditory brainstem evoked potentials; Digital filtering; Planar segments; Three-channel Lissajous trajectories (Pratt, H. (43) 159)

**Forward masking**
Middle latency response; Auditory evoked response; Tuning curve; Frequency selectivity; Gerbil; MLR; ABR (Smith, D.I. (43) 95)

**Frequency selectivity**
Middle latency response; Auditory evoked response; Tuning curve; Forward masking; Gerbil; MLR; ABR (Smith, D.I. (43) 95)

Cochlear amplifier; Speech discrimination; Hearing loss (Reuter, G. (43) 219)

**Frog**
Efferent; Whole cell patch clamp; Acetylcholine; Potassium current; Carbachol; Atropine; Semicircular canal; Hair cell (Housley, G.D. (43) 121)

**Furosemide**
Haircell; Transduction; Cochlea (Hubbard, A.E. (43) 269)

**Ganglion cell**
Hair cell; Regeneration; Noise (Ryals, B.M. (43) 81)

**Genetic deafness**
Deafferentation; Central auditory system (Durham, D. (43) 39)

**Gerbil**
Middle latency response; Auditory evoked response; Tuning curve; Forward masking; Frequency selectivity; MLR; ABR (Smith, D.I. (43) 95)

Cochlea; Vestibular system; ATPase-$Na^+$,$K^+$; Carbonic anhydrase; Immunocytochemistry; Inner ear (Spicer, S.S. (43) 205)

**Group delay**
Amplitude modulation; Modulation transfer function; Vector strength; Intensity dependence; Auditory midbrain, Leopard frog (Eggermont, J.J. (43) 181)

**Guinea pig**
Hydrops; Distortion; Cochlea (Horner, K. (43) 71)

Middle latency response; Ketamine; Xylazine; Auditory system sensitivity; Anesthesia (Crowther, J.A. (43) 115)

Immunocytochemistry; Spectrin; Hair cells; Cochlea (Ylikoski, J. (43) 199)

**Hair bundle**
Outer hair cell; Cochlea; Adaptation (Russell, I.J. (43) 55)

**Hair cell**
Regeneration; Ganglion cell; Noise (Ryals, B.M. (43) 81)

Efferent; Whole cell patch clamp; Frog; Acetylcholine; Potassium current; Carbachol; Atropine; Semicircular canal (Housley, G.D. (43) 121)

Cochlea; Receptor potential; Two-tone suppression (Cheatham, M.A. (43) 135)

Transduction; Cochlea; Furosemide (Hubbard, A.E. (43) 269)

**Hair cells**
Basilar papilla; Chicks; Culture medium (Guttenplan, M. (43) 47)

Immunocytochemistry; Spectrin; Cochlea; Guinea pig (Ylikoski, J. (43) 199)

**Hearing loss**
Cochlear amplifier; Frequency selectivity; Speech discrimination (Reuter, G. (43) 219)

**Human**
Cochlear nerve; Spiral ganglion; Electron microscopy; Quantification; Block surface method (Spoendlin, H. (43) 25)

**Hydrops**
Distortion; Cochlea; Guinea pig (Horner, K. (43) 71)

**Immunocytochemistry**
Spectrin; Hair cells; Cochlea; Guinea pig (Ylikoski, J. (43) 199)

Cochlea; Vestibular system; ATPase-$Na^+$,$K^+$; Carbonic anhydrase; Gerbil; Inner ear (Spicer, S.S. (43) 205)

**Inferior colliculus**
Cat; Single cell recording; Binaural masking (Caird, D. (43) 1)

**Inner ear**
Cochlea; Vestibular system; ATPase-$Na^+$,$K^+$; Carbonic anhydrase; Immunocytochemistry; Gerbil (Spicer, S.S. (43) 205)

**Intensity dependence**
Amplitude modulation; Modulation transfer function; Group delay; Vector strength; Auditory midbrain, Leopard frog (Eggermont, J.J. (43) 181)

**Interpeak interval**
Auditory brainstem; Tonal stimuli; Aging; Rat; Latency (Coleman, W.A.C.J.J.R. (43) 171)

**Ketamine**
Middle latency response; Xylazine; Guinea pig; Auditory system sensitivity; Anesthesia (Crowther, J.A. (43) 115)

**Latency**
Auditory brainstem; Tonal stimuli; Aging; Rat; Interpeak interval (Coleman, W.A.C.J.J.R. (43) 171)

**Lectin binding**
Otolithic membrane; Saccule; Polyacrylamide gel electrophoresis; Electroblotting; Collagen (Khan, K.M. (43) 149)

**Middle latency response**
Auditory evoked response; Tuning curve; Forward masking; Frequency selectivity; Gerbil; MLR; ABR (Smith, D.I. (43) 95)

Ketamine; Xylazine; Guinea pig; Auditory system sensitivity; Anesthesia (Crowther, J.A. (43) 115)

**MLR**
Middle latency response; Auditory evoked response; Tuning curve; Forward masking; Frequency selectivity; Gerbil; ABR (Smith, D.I. (43) 95)

**Modulation transfer function**
Amplitude modulation; Group delay; Vector strength; Intensity dependence; Auditory midbrain, Leopard frog (Eggermont, J.J. (43) 181)

**Neural modelling**
Anuran; Auditory nerve; Dorsal medullary nucleus; Temporal selectivity; Torus semicircularis (Van Stokkum, I.H.M. (43) 231)

**Neuropeptide Y**
Cochlear blood flow; Noradrenaline; Calcitonin gene-related peptide; Substance P; Vasoactive intestinal polypeptide (Carlisle, L. (43) 107)

**Noise**
Hair cell; Regeneration; Ganglion cell (Ryals, B.M. (43) 81)

**Noradrenaline**
Cochlear blood flow; Calcitonin gene-related peptide; Substance P; Vasoactive intestinal polypeptide; Neuropeptide Y (Carlisle, L. (43) 107)

**Olivocochlear bundle**
Temporary threshold shift; Efferent innervation (Hildesheimer, M. (43) 263)

**Olivocochlear efferent**
Otoacoustic emission; Contralateral sound; Cochlear micromechanics (Collet, L. (43) 251)

**Otoacoustic emission**
Olivocochlear efferent; Contralateral sound; Cochlear micromechanics (Collet, L. (43) 251)

**Otolithic membrane**
Saccule; Polyacrylamide gel electrophoresis; Electroblotting; Lectin binding; Collagen (Khan, K.M. (43) 149)

**Outer hair cell**
Cochlea; Adaptation; Hair bundle (Russell, I.J. (43) 55)

**Pigmented rat**
Distortion-product emissions; Cochlear development (Henley, III, C.M. (43) 141)

**Planar segments**
Auditory brainstem evoked potentials; Equivalent dipole moment; Digital filtering; Three-channel Lissajous trajectories (Pratt, H. (43) 159)

**Polyacrylamide gel electrophoresis**
Otolithic membrane; Saccule; Electroblotting; Lectin binding; Collagen (Khan, K.M. (43) 149)

**Potassium current**
Efferent; Whole cell patch clamp; Frog; Acetylcholine; Carbachol; Atropine; Semicircular canal; Hair cell (Housley, G.D. (43) 121)

**Quantification**
Cochlear nerve; Spiral ganglion; Human; Electron microscopy; Block surface method (Spoendlin, H. (43) 25)

**Rat**
Auditory brainstem; Tonal stimuli; Aging; Latency; Interpeak interval (Coleman, W.A.C.J.J.R. (43) 171)

**Receptor potential**
Cochlea; Hair cell; Two-tone suppression (Cheatham, M.A. (43) 135)

**Regeneration**
Hair cell; Ganglion cell; Noise (Ryals, B.M. (43) 81)

**Saccule**
Otolithic membrane; Polyacrylamide gel electrophoresis; Electroblotting; Lectin binding; Collagen (Khan, K.M. (43) 149)

**Semicircular canal**
Efferent; Whole cell patch clamp; Frog; Acetylcholine; Potassium current; Carbachol; Atropine; Hair cell (Housley, G.D. (43) 121)

**Single cell recording**
Cat; Inferior colliculus; Binaural masking (Caird, D. (43) 1)

**Spectrin**
Immunocytochemistry; Hair cells; Cochlea; Guinea pig (Ylikoski, J. (43) 199)

**Speech discrimination**
Cochlear amplifier; Frequency selectivity; Hearing loss (Reuter, G. (43) 219)

**Spiral ganglion**
Cochlear nerve; Human; Electron microscopy; Quantification; Block surface method (Spoendlin, H. (43) 25)

**Substance P**
Cochlear blood flow; Noradrenaline; Calcitonin gene-related peptide; Vasoactive intestinal polypeptide; Neuropeptide Y (Carlisle, L. (43) 107)

**Temporal selectivity**
Anuran; Auditory nerve; Dorsal medullary nucleus; Neural modelling; Torus semicircularis (Van Stokkum, I.H.M. (43) 231)

**Temporary threshold shift**
Efferent innovation; Olivocochlear bundle (Hildesheimer, M. (43) 263)

**Three-channel Lissajous trajectories**
Auditory brainstem evoked potentials; Equivalent dipole moment; Digital filtering; Planar segments (Pratt, H. (43) 159)

**Tonal stimuli**
Auditory brainstem; Aging; Rat; Latency; Interpeak interval (Coleman, W.A.C.J.J.R. (43) 171)

**Torus semicircularis**
Anuran; Auditory nerve; Dorsal medullary nucleus; Neural modelling; Temporal selectivity (Van Stokkum, I.H.M. (43) 231)

**Transduction**
Haircell; Cochlea; Furosemide (Hubbard, A.E. (43) 269)

**Tuning curve**
Middle latency response; Auditory evoked response; Forward masking; Frequency selectivity; Gerbil; MLR; ABR (Smith, D.I. (43) 95)

**Two-tone suppression**
Cochlea; Hair cell; Receptor potential (Cheatham, M.A. (43) 135)

**Vasoactive intestinal polypeptide**
Cochlear blood flow; Noradrenaline; Calcitonin gene-related peptide; Substance P; Neuropeptide Y (Carlisle, L. (43) 107)

**Vector strength**
Amplitude modulation; Modulation transfer function; Group delay; Intensity dependence; Auditory midbrain, Leopard frog (Eggermont, J.J. (43) 181)

**Vestibular system**
Cochlea; ATPase-$Na^+$,$K^+$; Carbonic anhydrase; Immunocytochemistry; Gerbil; Inner ear (Spicer, S.S. (43) 205)

**Whole cell patch clamp**
Efferent; Frog; Acetylcholine; Potassium current; Carbachol; Atropine; Semicircular canal; Hair cell (Housley, G.D. (43) 121)

**Xylazine**
Middle latency response; Ketamine; Guinea pig; Auditory system sensitivity; Anesthesia (Crowther, J.A. (43) 115)